REMARKS

It is noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Claims 5-20 and 27-35 are all of the claims pending in the present Application. Claims 5-20, 27-30, 34 and 35 are allowed. Claims 31-33 are rejected.

Claims 31-33 stand rejected under 35 USC §102(b) as anticipated by US Patent 5,905,418 to Ehara et al.

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

As described and claimed, for example, by independent claim 31, the present invention is directed to an SAW device including two SAW elements which are mounted on said SAW device and which have center frequencies different from each other. At least one of the two SAW elements comprises a branching filter comprising a SAW element comprising a first wiring portion formed between input and output terminals, a plurality of second wiring portions formed between the first wiring portion and a reference potential terminal, and at least two single unit elements.

Each of the single unit elements include a first SAW resonator which is located in the first wiring portion and which has a predetermined resonant frequency and a predetermined anti-resonant frequency, a second SAW resonator which is connected to the second wiring portion of the side of the input terminal of the first SAW resonator and which has an anti-resonant frequency corresponding with the predetermined resonant frequency of the first SAW resonator, a third SAW resonator which is connected to the second wiring portion of the side of the output terminal of the first SAW resonator and which has an anti-resonant frequency corresponding with the predetermined resonant frequency of the first SAW resonator, a first connection point for connecting the second SAW resonator of the side of the reference potential terminal and the third SAW resonator of the side of the reference potential terminal with each other, and a first inductance element which is located between the first connection point and the reference potential terminal.

The respective predetermined resonant frequency of each of the single unit elements is corresponding with each other.

II. THE PRIOR ART REJECTIONS

The Examiner alleges that claims 31-33 are anticipated by Ehara. Applicant respectfully disagrees.

Relative to the rejection for claim 31, Applicant submits that, in Ehara, the resonant frequencies of the two single unit elements are defined to satisfy band-pass requirements of a ladder filter. However, Applicant submits that the definition of the resonant frequency of the present invention is completely different from these requirements in Ehara.

Specifically, the resonant frequency of the present invention is defined as resonant frequency due to resonance generated responsive to electrostatic capacitance and inductance of the SAW resonator in the single unit element, which is a different concept from resonance/anti-resonance of the SAW resonator as developed as an entire structure.

That is, in Figure 23, the resonant frequencies are a resonant frequency fs of a serially connected SAW resonator and a resonant frequency fr of a parallel connected SAW resonator. In contrast, the resonant frequency of the present invention is defined as a resonant frequency due to the third resonance generated responsive to electrostatic capacitance and inductance of the SAW resonator *in the single unit element*, differently from resonance/anti-resonance of the SAW resonator. Resonance/anti-resonance of a SAW resonator are generated by piezoelectric effects, while the third resonance is electrically generated by electrostatic capacitance and inductance *in the single unit element*. The use of two resonators thus defined is significant as a component in this claim.

Figure 23 of Ehara does not disclose a plurality of single unit elements, so that the circuit disclosed in Figure 23 is different from that of the present invention. Figure 23 can define the resonant frequency of the SAW resonator as two ones. However, this figure cannot define two resonant frequencies of the single unit element. In the circuit of Figure 23, it is not possible to define the resonant frequency of the single unit element one over another, although the same is available in the present invention. In Ehara, improvement of attenuation by adding resonators is achieved by adding the degrees of an open-circuit impedance and a

short-circuit impedance in a bisection circuit. However, such improvement of attenuation by thus adding the degrees of filter circuit is well-known by a conventional filter theory. Ehara merely teaches such well-known improvement of attenuation by calculation, using numerical formulas.

To be sure, Figure 25 of Ehara discloses two single unit elements to which serial arm resonators are connected. Figure 25 can, therefore, obtain technical advantages similar to those of the present invention only in a certain specific case. Namely, in that certain specific case, circuit elements within each single unit element are intentionally located so as to satisfy the requirements of a ladder filter circuit and, in order that capacitance and inductances of each SAW resonator may be determined to equalize the resonant frequencies of the SAW resonators to each other. However, Ehara makes no such suggestion.

In Figure 23, the resonant frequencies of SAW resonators 96, 98, and 100 are the same as each other, apertures thereof are the same as each other, and inductances of 102 and 104 are both 0.1nH, namely, the same as each other. Sharpness is then improved by adding filter 110 having a comparatively sharp characteristic to a filter circuit constructed by 106 and 108 including single unit elements have not so good (poor) sharpness.

It is not possible that sharpness is improved similarly even in the constitution of Figure 25, as it stands. Improvement of attenuation is achieved by adding the degrees of a filter circuit. Insertion loss is increased.

In Ehara, the meritorious effect of Figure 25 is explained by the fact that the open circuit impedance and the short-circuit impedance have the same degrees in the bisection circuit, namely, that numbers of attenuation pole are the same. This is the same reason as that of the first embodiment. Ehara neither teaches nor suggests the meritorious effect of further improvement of attenuation achieve by the second embodiment, compared with the first embodiment. Accordingly, Ehara also fails to teach or suggest by Figure 25 the meritorious effect of the present invention. In other words, the meritorious effect of Figure 25 is considered to be similar to that of the first embodiment in Ehara.

Hence, turning to the clear language of the claim, in Ehara there is no teaching or suggestion of: "... wherein respective said predetermined resonant frequency of each of said single unit elements is corresponding with each other", as required by claim 31.

Relative to the rejection for claims 32 and 33: To be repeated, Ehara neither teaches nor suggests the meritorious effect of the present invention by Figure 25. In Figure 25, the meritorious effect is explained by the fact that the open-circuit impedance and the short-circuit impedance have the same degrees in the bisection circuit, namely, that numbers of attenuation pole are the same. This is the same reason as that of the first embodiment. Ehara does not suggest the merit of further improvement of attenuation achieved by the second embodiment compared with the first embodiment and, accordingly, fails to suggest the concepts of the present invention, since the merit of the circuit of Figure 25 is considered as similar to that of the first embodiment in Ehara.

Similar to the comments above for claim 31, the meritorious effect of the present invention described by claims 32 and 33 is explained as the electrostatic capacitance inserted between two single unit elements that enables the resonant frequency of single unit elements to be adjusted. In this respect, such an adjustment is achieved by using electrostatic capacitance of the SAW resonator in claim 32, while the same is achieved by using a condenser in claim 33. Ehara does not intend to adjust resonant frequency of single unit elements of Figure 25. Therefore, Ehara does not teach or suggest such use or the addition of electrostatic capacitance.

Nor does Ehara disclose or suggest the insertion (addition) of a SAW resonators having no resonant frequency (namely, electrostatic capacitance). It is not intended that a predetermined resonant frequency of the first SAW resonator necessarily be equal to the anti-resonant frequency thereof. Nor is it necessary that both frequencies are strictly the same as each other. It is enough merely that both frequencies are the same as each other to the extent to enable a predetermined function of a filter, and the like.

In Ehara, improvement of attenuation by adding resonators is achieved by adding the degrees of an open-circuit impedance and a short-circuit impedance in a bisection circuit. However, such improvement of attenuation by thus adding the degrees of a filter circuit is well-known by conventional filter theory. Ehara merely teaches such well-known improvement of attenuation by calculation using numerical formulas. Figure 25 suggests that the open-circuit impedance and the short-circuit impedance have the same degrees in the bisection circuit, namely, suggests that numbers of attenuation poles are the same. In this point, Figure 25 neither suggests nor teaches the technical advantages of improvement of attenuation by adding resonators.

Hence, turning to the clear language of the claim, in Ehara there is no teaching or suggestion of: "...a first wiring portion formed between input and output terminals; a plurality of second wiring portions formed between said first wiring portion and a reference potential terminal; and at least two single unit elements, each of said single unit elements including: a first SAW resonator which is located in said first wiring portion and which has a predetermined resonant frequency and a predetermined anti-resonant frequency; a second SAW resonator which is connected to said second wiring portion of the side of said input terminal of said first SAW resonator and which has an anti-resonant frequency corresponding with said predetermined resonant frequency of said first SAW resonator; a third SAW resonator which is connected to said second wiring portion of the side of said output terminal of said first SAW resonator and which has an anti-resonant frequency corresponding with said predetermined resonant frequency of said first SAW resonator ....", as required by claim 32.

Relative to the rejection for claim 33, Applicant submits that Ehara does not disclose insertion (addition) of a SAW resonator having no resonant frequency.

Hence, turning to the clear language of the claim, in Ehara there is no teaching or suggestion of: "... a first SAW resonator which is located in said first wiring portion and which has a predetermined resonant frequency and a predetermined anti-resonant frequency; a second SAW resonator which is connected to said second wiring portion of the side of said input terminal of said first SAW resonator and which has an anti-resonant frequency corresponding with said predetermined resonant frequency of said first SAW resonator; a third SAW resonator which is connected to said second wiring portion of the side of said output terminal of said first SAW resonator and which has an anti-resonant frequency corresponding with said predetermined resonant frequency of said first SAW resonator....", as required by claim 33.

For the reasons stated above, the claimed invention is fully patentable over the cited references.

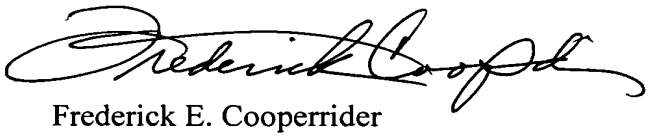
III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 5-20 and 27-35, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully submitted,



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